

WHAT IS CLAIMED IS:

1. A film camera adapted for electronically capturing an image, said camera comprising:
 - a camera enclosure including a film drive for positioning a photographic film in a first image exposure plane within the enclosure;
 - an optical system including one or more lens elements defining an optical path for forming the image on the first image plane;
 - a receptacle within the enclosure for receiving a removable memory card through an exterior opening in the enclosure and guiding the memory card into the optical path, wherein said memory card includes an integrated image sensor and memory device for storing one or more images captured by the image sensor when it is located in the optical path;
 - means for sensing the presence of the memory card in the receptacle with the image sensor in the optical path; and
 - a camera control stage responsive to the sensing means for adjusting the optical system to form the image at a second image plane on a surface of the image sensor and for disabling the film drive, thereby preventing the film from being advanced when the image sensor is used to capture the image.
2. The camera as claimed in claim 1 wherein the optical system includes a shutter arranged in the optical path between the receptacle and the first image exposure plane and said camera control stage further disables the shutter so that it remains closed over the first image exposure plane when the memory card is in the receptacle.
3. The camera as claimed in claim 1 wherein the memory card and receptacle form a light tight barrier that prevents exposure of the film when the memory card is fully inserted into the receptacle.
4. The camera as claimed in claim 1 wherein the receptacle includes a light lock at or near the exterior opening in the camera enclosure that prevents unwanted light from entering into the enclosure.

5. The camera as claimed in claim 1 wherein the receptacle includes a light tight baffle that is positioned in front of the first image exposure plane before the memory card is inserted into the receptacle.

6. The camera as claimed in claim 1 wherein the memory card includes power contacts, and the camera control stage further includes a power supply for providing power to the memory card through the power contacts when the memory card is fully inserted into the receptacle.

7. The camera as claimed in claim 1 wherein the memory card includes clock signal contacts, and the camera control stage further provides clocking signals to the memory card through the clock signal contacts when the memory card is fully inserted into the receptacle.

8. The camera as claimed in claim 1 wherein the memory card provides at least one image sensor parameter selected from the group consisting of resolution, size and aspect ratio to the camera control stage for appropriately adjusting optical object to image plane conjugates of the optical system according to the type of image sensor on the memory card.

9. A film camera adapted for electronically capturing an image, said camera comprising:

a camera enclosure including a film drive for positioning a photographic film in a first image exposure plane within the enclosure;

an optical system including one or more lens elements defining an optical path for forming the image on the first image plane;

a receptacle within the enclosure for receiving a removable memory card through an exterior opening in the enclosure and guiding the memory card into the optical path, wherein said memory card includes an image sensor, a memory device for storing one or more images captured by the image sensor when it is located in the optical path, and an electronic interface for transferring an image signal from the image capture card;

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a digital display on the camera for displaying an image signal captured by the image sensor and transferred to the display via the electronic interface when the memory card is fully inserted into the receptacle; and

means for sensing the presence of the memory card in the optical path in order to activate the digital display.

10. The camera as claimed in claim 9 wherein the image sensor produces a still image and the digital display is used to display the still image after it has been captured by the image sensor.

11. A film camera adapted for electronically capturing an image, said camera comprising:

a camera enclosure including a film drive for positioning a photographic film in a first image exposure plane within the enclosure;

an optical system including one or more lens elements defining an optical path for forming the image on the first image plane;

a receptacle within the enclosure for receiving a removable memory card through an exterior opening in the enclosure and guiding the memory card into the optical path, wherein said memory card includes an image sensor and a memory device for storing one or more images captured by the image sensor when it is located in the optical path;

a light lock associated with the receptacle for preventing entry of unwanted light into the camera through the exterior opening; and

a camera control stage responsive to the presence of the memory card in the receptacle for adjusting the optical system to form the image at a second image plane on a surface of the image sensor and for disabling the film drive, thereby preventing the film from being advanced when the image sensor is used to capture the image.

12. The camera as claimed in claim 11 wherein the receptacle includes a light-tight door preventing entry of light into the camera when the memory card is not in the receptacle.

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13. The camera as claimed in claim 12 wherein the receptacle includes means for engaging the memory card and holding it fully into the camera so that the light-tight door may close before the image sensor is used to capture an image.

14. The camera as claimed in claim 11 wherein the receptacle further includes means for initiating the ejection of the memory card from the camera.

15. The camera as claimed in claim 11 wherein the light lock is a light tight baffle that is positioned in front of the first image exposure plane before the memory card is inserted into the receptacle.

16. A film camera adapted for electronically capturing an image, said camera comprising:

a camera enclosure including a film drive for positioning a photographic film in a first image exposure plane within the enclosure;

an optical system including one or more lens elements defining an optical path for forming the image on the first image plane;

a receptacle within the enclosure for receiving a removable memory card through an exterior opening in the enclosure and guiding the memory card into the optical path, wherein said memory card includes an image sensor and a memory device for storing one or more images captured by the image sensor when it is located in the optical path;

a display on the camera for providing camera operating information to a user of the camera; and

means for signaling to the display the presence of the memory card in the receptacle so that the user of the camera may be prepared for a digital capture.

17. The camera as claimed in claim 16 wherein one or more lens elements are interchangeable and the means for signaling initiates a visible signal on the display reminding the user to change a lens element.

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18. The camera as claimed in claim 16 wherein the display is a viewfinder and the means for signaling produces a visible signal in the viewfinder.

19. A digital camera adapted for electronically capturing an image, said digital camera comprising:

a camera enclosure;

an optical system including one or more lens elements defining an optical path for forming the image;

a receptacle within the enclosure for receiving a removable memory card through an exterior opening in the enclosure and guiding the memory card into the optical path, wherein said memory card includes an integrated image sensor and memory device for storing one or more images captured by the image sensor when it is located in the optical path;

means for sensing the presence of the memory card in the receptacle with the image sensor in the optical path; and

a camera control stage responsive to the sensing means for controlling operation of the camera.

20. The digital camera as claimed in claim 19 wherein the camera control stage adjusts the optical system to form the image at an image plane on a surface of the image sensor.

21. The digital camera as claimed in claim 19 wherein the memory card includes power contacts, and the camera control stage further includes a power supply for providing power to the memory card through the power contacts when the memory card is fully inserted into the receptacle.

22. The digital camera as claimed in claim 19 wherein the memory card includes clock signal contacts, and the camera control stage further provides clocking signals to the memory card through the clock signal contacts when the memory card is fully inserted into the receptacle.

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23. The digital camera as claimed in claim 19 wherein the memory card provides at least one image sensor parameter selected from the group consisting of resolution, size and aspect ratio to the camera control stage for appropriately adjusting optical object to image plane conjugates of the optical system according to the type of image sensor on the memory card.

24. A memory card adapted to be removably inserted through an opening in a camera, said memory card including an image sensor and a memory device both integrated on the card for capturing and storing one or more images when the card is inserted into a camera and the image sensor is located in an optical image-forming path in the camera.

25. The memory card as claimed in claim 24 wherein the memory card is a dual card that is doubly useful with a film camera or a digital camera, said memory card further including a memory controller that senses when the memory card is being used in a digital camera having its own dedicated image sensor, and wherein the memory controller causes the memory device to store images captured by the dedicated sensor rather than the sensor integrated on the memory card.

26. A memory card conforming to a compact flash card standard and usable with an electronic camera that includes a flash card interface, said memory card adapted to be removably inserted through a slotted opening in a camera and including a CMOS image sensor and a flash memory device both integrated on the card for capturing and storing one or more images when the card is inserted into a camera and the image sensor is located in an optical image-forming path in the camera.

27. A method for electronically capturing an image in a film camera, said method comprising the steps of:

positioning a photographic film in a first image exposure plane within the camera;

utilizing an optical system including one or more lens elements to define an optical path for forming the image on the first image plane;

inserting a removable memory card through an exterior opening in the camera and guiding the memory card into the optical path, wherein the memory card includes an integrated image sensor and memory device for storing one or more images captured by the image sensor when it is located in the optical path;

sensing the presence of the memory card in the receptacle with the image sensor in the optical path;

preparing the camera for digital capture by adjusting the optical system to form the image at a second image plane on a surface of the image sensor and disabling the film drive, thereby preventing the film from being advanced when the image sensor is used to capture the image;

initiating an image exposure on the image sensor and subsequently storing the image in the memory device on the memory card; and

removing the memory device from the camera, thereby restoring the film capture capability of the camera.

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